## Space Weather Forecast

Issued on Thursday, 06 April 2023 at 12:10 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Chance of Moderate flares (R1-R2; Minor-Moderate radio blackouts) throughout.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Moderate, with the new region on the southeast limb producing a Moderate-class flare, peaking at 06/0553 UTC. There are three sunspot regions on the visible disc. A region in the southwest currently appears to be the largest and most complex region on the disc and has previously exhibited some magnetic complexity although this has now faded. However, given that the new region rotating onto the southeast limb has already produced a Moderate-class flare, this suggests greater complexity than can currently be seen.

No Earth directed Coronal Mass Ejections (CMEs) have been seen in available satellite imagery.

**Solar Wind / Geomagnetic Activity:** The solar wind has shown a steady decline as the recent coronal hole fast wind fades. Wind speeds eased from around 470 km/s to near 380 km/s. Magnetic field strength has been weak throughout, with the north-south component varying weakly. Geomagnetic activity has been Quiet to Unsettled.

**Energetic Particles / Solar Radiation:** High energy protons have been at background levels, with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Solar activity is most likely to be Low, but with a chance of Moderate activity, either from the new region on the SE limb or from the other region in the southwest.

**Solar Wind / Geomagnetic Activity:** There are no Earth-directed CMEs expected. The recent coronal hole fast wind has now faded, with wind speeds at slow levels. In the absence of any CMEs, wind speeds are expected to remain at or near this level for much of the period. A further coronal hole may start to show some fast wind influence at the end of Day 4 (09 Apr), but this is more likely to occur on the following day.

Geomagnetic activity is expected to be Quiet to Unsettled, perhaps Active later on Day 4 if we do see the fast wind.

**Energetic Particles / Solar Radiation:** Solar radiation storms are unlikely through this period, although there is a very slight chance of reaching the Minor Storm level should a more significant flare occur.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 1 | 1 | 1 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 25 | 25 | 25 | 25 |
| Very Active | R3 to R5 X | No | 5 | 5 | 5 | 5 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 3 | 3 | 3 | 3 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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